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Voluntary Disclosure of Internal Control Weakness and Earnings Quality: Evidence From China

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ABSTRACT

Using a sample of 1059 listed firms that voluntarily provide internal control reports in the period 2010–2011, this paper investigates the relationship between voluntary disclosure of internal control weaknesses (ICWs) and earnings quality in China. Our results show that earnings quality, measured by absolute discretionary accruals, is significantly associated with voluntary disclosure of ICWs. Furthermore, our results demonstrate that both accounting-related and non-accounting-related ICWs affect earnings quality. This study contributes to the internal control literature by extending the evidence for ICW disclosure to an emerging economy and examining the impact of disclosure of different types of ICWs on earnings quality. This study demonstrates that the control of non-accounting-related ICWs is critical for enterprise risk management.

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1. Introduction

Establishing a high-quality internal control system has long been viewed as an important mechanism to ensure high-quality financial reporting. Prior studies show that weak internal control can increase the probability of material errors and false financial disclosures (Bell & Carcello, 2000; Kinney & McDaniel, 1989); it can also increase the probability of a firm restating its earnings (Bizarro, Boudreaux, & Garcia, 2011), as weak internal control creates more opportunities for intentional earnings management and unintentional accounting estimation errors (Ashbaugh-Skaife, Collins, Kinney, & LaFond, 2009; Doyle, Ge, & McVay, 2007). In July 2002, the U.S. Congress passed the Sarbanes–Oxley Act (SOX) in response to numerous corporate failures and accounting scandals (Altamuro & Beatty, 2010). The most important aspect of SOX is its requirement of the management and the auditor to evaluate internal control on financial reporting (Public Company Accounting Oversight Board [PCAOB], 2004; Securities and Exchange Commission [SEC], 2003). While the effectiveness of such regulation on internal control is still debated and remains controversial (Bedard, 2011; Costello & Wittenberg-Moerman, 2011; Doyle et al., 2007; Rice & Weber, 2012), some countries have followed the U.S. lead, introducing internal control reporting (ICR) with a softer approach (Cox, 2006). For example, Japan has implemented an internal reporting system with less strict requirements for all listed firms from 2008 (Nishizaki, Takano, & Takeda, 2014). Other countries, such as the UK and other European Union member states, have adopted a broad approach (Deumes & Knechel, 2008) that encompasses a wider scope of internal control systems in relation to the whole management

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process, rather than focusing only on financial reporting. In May 2008, the *Basic Standard of Enterprise Internal Control (Basic Standard* hereafter) was jointly issued by five regulatory authorities in China, including the Ministry of Finance (MOF, 2008), the China Securities and Regulatory Commission (CSRC), the National Auditing Office (NAO), the China Banking Regulatory Commission (CBRC), and the China Insurance Regulatory Commission (CIRC). Three supporting guidelines for implementing the *Basic Standard* were further issued in 2010. The *Basic Standard* and guidelines require Chinese listed firms to provide a management evaluation report on the effectiveness of their internal control as well as an auditor's assessment of the effectiveness of clients' internal control. In an ICR, the Chinese listed firm needs to disclose whether an internal control weakness (ICW) is minor, major, or serious; the ICR also includes a remedial plan for its ICWs. However, these regulations became mandatory only from January 1, 2012. Prior to this date, firms could choose to voluntarily comply with internal control regulations (MOF, 2010a,b,c).

Prior studies suggest a consistent and negative relationship between disclosure of ICWs and earnings quality in Western countries (Ashbaugh-Skaife, Collins, Kinney, & LaFond, 2008; Chan, Farrell, & Lee, 2008; Doyle et al., 2007; Lu, Richardson, & Salterio, 2011). Our study differs from prior studies in several aspects. First, China has a different financial reporting environment in comparison with Western countries. Chinese listed firms exhibit a strong presence of state ownership, heavy political influence, and weak corporate governance mechanisms (Chen & Yuan, 2004; Liu & Lu, 2007; Liu & Sun, 2005). Therefore, research findings for Western markets may not necessarily be applicable to the implementation of the *Basic Standard* in China. Second, in the United States, SOX focuses particularly on the internal control system related to financial reporting; China's *Basic Standard* is, however, more comprehensive and extends the scope of the internal control system to a much broader scope of business management. The *Internal Control Application Guidelines* identify 18 internal control areas that listed firms in China must strengthen, from organizational structure, human resource management, budget, and corporate social responsibility to procurement and sales activities, outsourcing, and contract management. Internal control directly related to the preparation of financial reporting is only one of the components of the overall internal control system articulated in the *Basic Standard*. It is therefore important to investigate the association between earnings quality and ICWs in relation to the broader internal control system in China, in contrast to the narrow disclosure scope of ICWs in the U.S. In our study, we partition all ICWs into two categories: accounting-related ICWs versus non-accounting-related ICWs. We then examine the association between earnings quality and voluntary disclosure of each category of ICW. Third, U.S. SOX–focused studies are conducted in a mandatory disclosure regime, while the institutional setting of this study is voluntary. Fourth, we investigate not only the impact of the existence of ICWs on earnings quality but also the impact of the severity of ICWs on earnings quality. Our research is a significant extension of earlier studies. Doyle et al. (2007) and Ashbaugh-Skaife et al. (2008) use a dummy variable to measure whether a firm has ICWs and then compare the earnings quality between firms with and without ICWs, whereas, Lu et al. (2011) examine the relationship between accrual quality and the number of ICWs disclosed. We use both a dummy variable and a continuous variable to measure the existence and the severity of ICWs. Then, we investigate whether earnings quality is significantly different between firms with and without ICWs, and whether the severity of ICWs affects earnings quality.

This study has two goals. First, to investigate the relationship between voluntary disclosure of ICWs and earnings quality in Chinese listed firms in the period 2010–2011, the period in which listed firms could voluntarily release ICRs.[1] Second, this study investigates whether a much broader internal control standard, which extends from accounting-related to non-accounting-related internal control, has any impact on earnings quality. We hand-collected the ICW data from 1059 Chinese listed firms that voluntarily provided ICRs in 2010 and 2011. Following prior studies (Ashbaugh-Skaife et al., 2008; Chan et al., 2008; Doyle et al., 2007), we use absolute discretionary accruals (ABSDA) as a measure of earnings quality.

Our results show that earnings quality is significantly associated with ICWs disclosed by Chinese listed firms. ABSDA is positively related to disclosure of ICWs, meaning that firms with ICWs are more likely to be engaged in earnings management through use of discretionary accruals. With respect to different types of weaknesses, our results demonstrate that earnings quality is significantly associated with disclosure of both accounting-related and non-accounting-related ICWs.

In summary, we find that voluntary disclosure of ICWs by Chinese listed firms provides additional and useful information to users, enabling them to reassess their economic decisions. Our study makes significant contributions to the existing literature on internal control as well as earnings quality and holds practical implications for policy-making in China and around the world. First, prior studies show a negative association between disclosure of ICWs and earnings quality in the SOX 302 and 404 regimes (Ashbaugh-Skaife et al., 2008; Chan et al., 2008; Doyle et al., 2007). These results, however, are limited only to the context of the internal control system with particular emphasis on financial reporting. It is not clear whether ICWs other than those in financial reporting have any impact on earnings quality. Given that financial reporting is an integrated component of business operations and that the quality of financial disclosure is affected by all aspects of business management, our results suggest that a wider scope of disclosure of ICWs, including both accounting-related and non-accounting-related ICWs, does affect earnings quality. This is consistent with the view that different elements of internal control need to function together in order to minimize enterprise risks. This finding has profound policy implications for regulators worldwide who are considering whether the SOX requirement should be expanded to non-accounting-related areas. Second, our study is the first in the internal control literature to investigate the relationship between the severity of ICWs disclosed and earnings quality in an emerging stock market, which has different institutional attributes from those in developed markets. Our results enrich the internal control literature by

[1] Li, Tian, and Qi (2012) examine the relationship between auditor's unqualified opinions on internal controls (ARIC) and accrual quality. They use the overall auditor assessment of effectiveness of internal control (dummy variable) but not the presence of ICWs as a testing variable. They did not detect a significant difference in terms of earnings quality between ARIC and non-ARIC firms. Our paper is the first to directly investigate the impact of voluntary disclosure of ICWs on earnings quality in the Chinese context.

showing that earnings quality is affected not only by the existence of ICWs but also by their severity. Finally, our findings may assist regulators and professional bodies in China and worldwide to predict and comprehend the likely effects of implementing internal control regulations such as the *Basic Standard* in their own environment.

The remainder of this paper proceeds as follows. Development of the internal control regulatory framework in China is discussed in Section 2. Section 3 presents a literature review and hypothesis development, followed by an outline of the research design in Section 4. Section 5 discusses sample selection and descriptive statistics. Empirical results are presented and discussed in Section 6. Finally, conclusions are drawn in Section 7, which also addresses research limitations and considerations for future research.

2. Development of the internal control regulatory framework in China

Well aware of listed firms' deficiencies in internal control, regulators in China have determined to establish a comprehensive internal control regulatory framework. In June 2005, the MOF and CSRC jointly presented their report, *Improving Internal Control System in China by Referring to the U.S. SOX*, to the State Council, aiming to obtain approval and support from the state to develop a set of internal control standards and guidelines for Chinese listed firms. Four months later, CSRC issued *Advice on the Improvement of Internal Control System in Listed Firms*. Actively responding to the CSRC's initiatives, in June 2006, the Shanghai Stock Exchange issued internal control guidelines for the firms listed on the Shanghai Stock Exchange, and the Shenzhen Stock Exchange introduced similar guidelines in September 2006.

In 2008, the Ministry of Finance (MOF) released the *Basic Standard* jointly with the other four regulatory authorities in China (MOF, 2008). The aim of this standard is to ensure legal compliance of management and safeguarding of assets, improve operational efficiency and effectiveness, promote the development of corporate strategies, and provide comprehensive and transparent financial information. The *Basic Standard* states that an effective internal control system should encompass five elements: internal control environment, risk assessment, control activities, information and communication, and internal auditing; this is very similar to the Committee of Sponsoring Organizations (COSO) framework.[2] The overall principle of the *Basic Standard* states that the aim of establishing internal control regulations among Chinese enterprises is to strengthen enterprise management skills and their ability for risk control, in order to promote sustainable development of enterprises and safeguard the socialist market economy and public interests of society (MOF, 2008). The basic standard requires enterprises to continuously collect relevant information to assess potential risks that could hinder business development and to establish a professional team for making strategic policies to cope with both internal and external risks.[3] The *Basic Standard* highlights that "risk management" should be an ongoing and sustainable process.

Two years after issuing the basic standard, the five regulatory authorities issued the *Internal Control Application Guidelines*, the *Internal Control Evaluation Guidelines*, and the *Internal Control Audit Guidelines* as a set of implementing guidelines. The *Basic Standard* and guidelines require the management of listed firms to report a management evaluation on the effectiveness of their internal control as well as provide the auditor's assessment on the effectiveness of the client's internal control system. These regulations became mandatory only from January 1, 2012. Prior to 2012, firms could elect to voluntarily provide ICRs and have them audited. The *Internal Control Application Guidelines* explicitly stipulate 18 specific areas in which internal control needs to be effectively implemented (for details of the 18 areas, please see Table 2, Panel B). Depending on whether the 18 internal control areas have any direct impact on financial reporting, the areas are divided into two categories: accounting-related internal control areas and non-accounting-related internal control areas. The *Internal Control Application Guidelines* state that the purpose of strengthening internal control is to reduce the potential risks. The *Internal Control Evaluation Guidelines* require management to conduct a self-evaluation on the effectiveness of internal control over the 18 specific areas, concerning the five aspects stipulated in the *Basic Standard*. It also requires management, in its self-evaluation, to classify the severity of ICWs into three levels: minor, major, and serious. This regulation also addresses the importance of identifying ICWs and the procedure for issuing an internal control evaluation report. The *Internal Control Audit Guidelines* specify the risk audit procedures and require auditors to assess clients' business risks and risk management strategies.

3. Literature review and hypothesis development

Business entities all face uncertainties that present both risks and opportunities, with the potential to affect stakeholder value (COSO, 2004). The uncertainties confronted by firms come in a wide array of forms, from the threat of acquisitions by predators sweeping many industries as firms strive to build scale, to regulatory intervention that can adversely impact companies across industries or take a toll on a specific industry (Pellet, 2007).[4] These enterprise risks must be timely assessed, effectively controlled,

[2] The COSO framework, *Internal Control-Integrated Framework*, developed by the Committee of Sponsoring Organizations (COSO) of the Treadway Commission, is a widely used framework not only in the United States but also around the world. The original framework was produced in 1992 and was recently revised in 2013 (COSO, 2013; McNally, 2013).

[3] The internal risks could be related to the ethics and integrity of the board of directors and senior management, the competence of employees, asset management, information technology, and safety of the workplace. External risks can be associated with competition, regulatory intervention, natural disasters, etc. (MOF, 2008).

[4] The Casualty Actuarial Society (CAS) classifies enterprise risks into four categories, namely, hazard risk (e.g. liability torts, property damage, and natural catastrophes), financial risk (e.g. pricing risk, asset risk, currency risk, and liquidity risk), operational risk (e.g. customer satisfaction, product failure, integrity, and reputational risk; internal poaching and knowledge drain), and strategic risks (e.g. competition, social trend, and capital availability) (CAS, 2003). This classification shows that enterprise risks can be either internally derived or externally imposed.

and properly managed in order to assist firms in achieving their objectives, sustaining performance, and continuously improving stakeholder value. According to the *Enterprise Risk Management - Integrated Framework*, a document also issued by the COSO in 2004 (COSO Risk Framework hereafter), ERM is "*… a process*, *effected by an entity's board of directors*, *management and other personnel*, *applied in strategy setting and across the enterprise*, *designed to identify potential events that may affect the entity*, *and manage risk to be within its risk appetite*, *to provide reasonable assurance regarding the achievement of the entity's objectives.*" The COSO Risk Framework definition explicitly indicates that identifying and mitigating enterprise risk is a critical element of managerial strategy and is therefore a crucial measure for firms to achieve their performance and profitability targets and prevent loss of resources (COSO, 2004).

The principles of risk management, as highlighted by the COSO Framework, are the assessment and monitoring of (1) risks to achieving the entity's objectives, (2) the risk of potential fraud, and (3) business changes that could significantly impact the internal control and risk management system. COSO (2004) contends that effectiveness in risk management can only be achieved if internal control is encompassed into enterprise risk management, forming a more robust conceptualization and tool for management. According to COSO's Internal Control – Integrated Framework (COSO Internal Control Framework hereafter), business entities need to have five internal control elements functioning together: control environment, risk management, control activities, information and communication, and internal monitoring.[5]

Prior studies reveal a positive relationship between firms' risk controls and the quality of financial reporting (Brown, Pott, & Wömpener, 2014; Kinney, Maher, & Wright, 1990). Kinney et al. (1990) suggest that strong business risk control reduces the chance of false or misleading reporting due to unexpected deviations in operational and strategic plans. Brown et al. (2014) suggest that four specific channels of the compliance with internal control and risk management (ICRM) can improve earnings quality in Germany:

First, the implementation of high quality internal control and risk management can curb insiders' opportunities and incentive to intentionally misstate or misrepresent reported income. Second, compliance with ICRM can reduce the effects of unintentional omissions and procedural errors on reported information. Third, risk assessment and monitoring can mitigate inherent business risks and the direct and indirect impact of these risks on firms' reporting choices and the transparency of financial reports. Lastly, ICRM audit and reporting obligation can improve the transparency and information flow regarding ICRM quality among the management and supervisory boards and external auditors, which in turn, can mitigate the negative effect of ICRM weaknesses on accounting quality. (pp. 9–10)

Consistent with their expectation, Brown et al. (2014) find that German firms experience an increase in timely loss recognition and a decrease in loss avoidance behaviour after the ICRM reform. In summary, high-quality internal control has been considered an effective risk management tool in achieving a firm's performance and profitability targets, preventing the loss of resources and enhancing the reliability of financial reporting.

3.1. Voluntary disclosure of internal control weaknesses and earnings quality

ICWs represent the deficiency present in the internal control system, and accordingly, have the potential to impair a firm's ability to achieve its desired goals. Thus, the disclosure of ICWs to stakeholders reveals the presence of internal control deficiency and the level of the severity of such deficiency, which is perceived as 'bad' news for stakeholders. Why, then, do firms voluntarily disclose 'bad' news? The reason is that firms believe that the benefits of disclosure of ICWs outweigh the costs.[6] McMullen, Rahunandan, and Rama (1996) argue that the voluntary release of management reports on internal control (MRIC) can lead to enhanced internal controls in two ways. First, the process of preparing and releasing MRIC can increase awareness among the CEO and other top officials on the importance of internal control, preventing serious internal control problems from occurring. Second, the issuing of MRIC "*sends a signal regarding top management's commitment to internal control*" (McMullen et al., 1996, p.68).

Therefore, disclosure of ICWs has a signaling effect. Voluntary disclosure of ICWs demonstrates that a firm's management has established a strong awareness of the importance of internal control and is committed to identifying and closing loopholes affecting firm performance and the quality of financial information.

Prior studies find that earnings quality, measured by ABSDA, is closely associated with a firm's internal control quality (Ashbaugh-Skaife et al., 2008; Chan et al., 2008; Doyle et al., 2007; Lu et al., 2011). Focusing on the U.S. market in the SOX 302 and 404 regimes, Doyle et al. (2007) suggest that a weak internal control environment has the potential to allow management to make intentionally biased accruals and to make unintentional errors in accrual estimation. Ashbaugh-Skaife et al. (2008) investigate the effect of internal control deficiencies and their remediation on accrual quality under both the settings

[5] Control environment lays the foundation for a business entity's internal control, setting the tone of the "culture of control" for the entity. Management and employees' integrity, ethical values, competence, philosophy, and operating style constitute the general control environment. Risk assessment addresses the importance of the identification, analysis, and management of (operating, economic, industry, regulatory) risks that may prevent an entity from achieving its objectives. Control activities include segregation of duties, approvals, reviews, reconciliations, and authorizations, which aim to mitigate the identified risks. Information and communication refer to the timely capture and dissemination of pertinent information on internal and external events throughout an entity, and include communication among and between management, employees, suppliers, and customers. Internal monitoring continually evaluates the effectiveness of the other four internal control elements.

[6] Theories explaining the motivations for voluntary disclosure in general are also applicable to voluntary disclosure of internal control weakness. Prior studies suggest that firms strategically adopt voluntary disclosure in general to reduce potential litigation threat (Skinner, 1994), signal outstanding performance (Watson, Shrives, & Marston, 2002), strengthen the monitoring of management to reduce agency costs (Jensen & Meckling, 1976; Lang & Lundholm, 1993), legitimatize social status (Gray, Owen, & Adams, 1996), and manage the stakeholder–firm relationship (Ullmann, 1985).

of SOX 302 and SOX 404, and suggest that internal control deficiencies can affect abnormal accruals in two principal ways—through random, unintentional misstatements and through intentional misrepresentations. These authors suggest that ICWs are more likely associated with unintentional errors than intentional misstatements. Chan et al. (2008) also find evidence that firms reporting ICWs have higher ABSDA. By using OLS regression and path analysis, Lu et al. (2011) find that there is an overall negative net effect of ICWs on accrual quality in the Canadian setting.

Earnings management, being regarded as the intentional misrepresentation of financial information, is also prevalent in Chinese listed firms. Several studies find that firms use discretionary accruals to inflate their profits to seek eligibility for listing on the Chinese stock market, to avoid the possibility of being delisted, and to gain the opportunity for rights issues (Chan et al., 2008; Chen & Yuan, 2004; Chen, Firth, Gao, & Rui, 2006; Jian & Wong, 2004; Liu & Lu, 2007). There has been very limited study on the disclosure of ICWs and earnings quality in the Chinese context.[7] Based on the above discussion, our first hypothesis is formulated as:

H1. Ceteris paribus, earnings quality, measured in ABSDA, is positively associated with firm disclosure of ICWs.

3.2. Type of internal control weaknesses, enterprise risk management, and earnings quality

The motivations and benefits of voluntary disclosure of non-accounting-related ICWs derive from voluntary disclosure of non-financial information. The literature shows that non- financial information is a leading indicator strongly associated with firm performance (Banker, Potter, & Srinivasan, 2000; Ittner & Larcker, 1998). Ittner and Larcker (1998) find that customer satisfaction measures are positively and significantly associated with accounting performance. By using time-series data from 18 hotels, Banker et al. (2000) also find that non-financial measures, such as customer satisfaction, are positively related to financial performance. These authors find that both non-financial and financial performance improve if there is an incentive plan that includes non-financial performance measures. Dhaliwal, Hogan, Trezevant, and Wilkins (2011) show that voluntary disclosure of non-financial information about corporate social responsibility can reduce the cost of equity capital.

Voluntary disclosure of non-financial information also affects earnings quality, particularly the value relevance of financial information. Previous studies show that non- financial information can be used both to substitute for and to complement financial information (Luft, 2009). Amir and Lev (1996) find that accounting earnings alone are not value relevant; however, after adding non-financial measures of growth potential and market penetration, both financial and non-financial information become value relevant. These authors show a complementary relationship between financial and non-financial information. Simpson (2010) finds that disclosure of non-financial information is strongly associated with the accuracy of earnings forecast. Dhaliwal, Li, Tsang, and Yang (2011) show that issuance of stand-alone corporate social responsibility reports are related to lower analyst forecast error. In summary, disclosure of non-financial information can influence firm performance and earnings quality.

In line with this argument, disclosure of non-accounting-related ICWs, which can be regarded as non-financial information, can also affect earnings quality.

Although the focus of SOX 302 and 404 are on financial reporting, previous studies also attempt to classify ICWs into different categories and to investigate which types of ICW have more influence on earnings quality (Ashbaugh-Skaife et al., 2008; Doyle et al., 2007; Ge & McVay, 2005). Using a sample of 261 companies that disclosed at least one material weakness (MW) under the requirement of SOX 302 over the period 2002–2004, Ge and McVay (2005) find that out of a total of 493 MWs in their sample, the highest number of MWs (119) reported relate to account-specific MWs, followed by training (82), period-end/accounting policies (68), and others.[8] These authors also find that most of the account-specific weaknesses affect accrual accounts, such as accounts receivable, accounts payable, and inventory. Doyle et al. (2007) simplify the Ge and McVay (2005) classification and partition all MWs into account-specific and company-level MWs.[9] These authors find that since the MWs associated with account-specific areas are auditable and the MWs existing at the company level are not auditable, the positive association between weak internal controls and lower earnings quality is driven mainly by weakness disclosures relating to overall company-level MWs.

One of the distinctive differences between *Basic Standard* (also called China "SOX" in the literature) and U.S. SOX is that the disclosure scope of the *Basic Standard* is much broader than the scope of U.S. SOX. The Chinese *Basic Standard* requires firms to disclose ICWs related to both financial reporting and general management, while U.S. SOX focuses only on disclosure of ICWs related to financial reporting. We explore the unique Chinese setting by classifying the 18 areas of internal control reporting into accounting-related versus non-accounting-related areas. Under the Chinese setting, Ji, Lu, and Qu (2015) report that non-accounting-related areas, such as organizational structure and human resource management, are the areas with the

[7] The only study that comes close is Leng and Li (2011), which investigates the relationship between disclosure levels (index) of internal control, but not disclosure of ICWs per se, and earnings quality. These authors find that the higher the disclosure index of internal control, the better is the earnings quality. Our study is significantly different from Leng and Li (2011). We focus on investigating the impact of the disclosure of ICWs on earnings quality. In addition, Leng and Li (2011) cover only the year 2010, whereas our study covers the voluntary regime of ICW disclosure over the period 2010–2011.

[8] Ge and McVay (2005) classify the disclosed material weaknesses (MW) into nine types: "*Account-Specific, Training, Period-End Reporting/Accounting Policies, Revenue Recognition, Segregation of Duties, Account Reconciliation, Subsidiary-Specific, Senior Management, and Technology Issues*" (p. 142).

[9] According to Doyle et al. (2007), the account-specific MWs include: (1) inadequate internal controls for accounting for loss contingencies, including bad debts; (2) deficiencies in the documentation of a receivables securitization program; and (3) no adequate internal controls over the application of new accounting principles or application of existing accounting principles to new transactions. Company-level material weaknesses include those MWs related to (1) override by senior management and (2) ineffective control environment.

most underlying internal control problems in Chinese listed firms. The weak internal controls over these areas could indirectly affect earnings quality, since the ICWs in non-accounting-related areas eventually result in a weak internal control environment. For example, the lack of proper training of key personnel in accounting departments will compromise the internal checks and balances mechanism, and this, in turn, will make these firms more likely to have more unintentional errors and to provide managers with more opportunities to manipulate earnings. Our argument is echoed in Choi, Choi, Hogan, and Lee (2013). Conducting ICW research in the reporting environment of Korea, Choi et al. find that good internal control in human resources, measured by human resource investment, is negatively associated with ICW disclosure but positively associated with the likelihood of remediation of ICWs.

The *Basic Standard* (China SOX) not only has a broader scope including many non-accounting-related internal control areas, but also is EMR focused. For example, it states that the culture of internal control at the top management level ("tone at the top") is crucial for an organization to successfully implement its risk management strategies and effectively manage potential risks associated with its business operation and financial reporting. In addition, the *Basic Standard* emphasizes that risk management must be understood and embraced by business entities' personnel and driven from the top down through clear and consistent communication and messaging from the board and senior management (MOF, 2010a).

Higher levels of internal control weaknesses existing in non-accounting-related areas would unavoidably affect the risk management process flowing down within an organization. Since financial reporting is an integrated element in a listed firm, and the ultimate quality of financial reporting reflects a collection of different functions and activities in the process of transforming financial data to useful information for market participants (Wilkinson, 2000), the internal control weaknesses in non-accounting-related areas are expected to have a negative impact on the information transformation process and diminish the effectiveness of risk management, and, ultimately, the quality of financial reporting.[10] In this paper, we not only examine the association between earnings quality and overall ICWs, but we also investigate whether earnings quality is associated with different types of ICWs: accounting-related or non-accounting-related ICWs.[11] Based on the preceding discussions, our second hypothesis is formulated as follows:

H2. Ceteris paribus, earnings quality, measured in ABSDA, is positively associated with different types of ICW.

According to arguments relating to the potential impact of accounting-related and non-accounting-related ICWs on earnings quality, our second hypothesis is further divided into:

H2a. Ceteris paribus, earnings quality, measured in ABSDA, is positively associated with firm disclosure of accounting-related ICWs.

H2b. Ceteris paribus, earnings quality, measured in ABSDA, is positively associated with firm disclosure of non-accounting-related ICWs.

4. Research design

Lennox, Francis, and Wang (2012) address the issue of sample selection bias. These authors point out that many accounting articles in leading journals fail to control for selection bias (Heckman, 1979). Selection bias occurs when samples are not selected randomly. The selection indicator, for example, whether a firm chooses to disclose ICWs, is an endogenous variable. To control for selection bias, we apply a two-stage model to test our hypotheses. In the first stage, we run the probit model (Model 1) and estimate the likelihood of firms disclosing ICWs.

$$\begin{aligned} Prob(DISWEAK)_{it} = f(&\alpha_1 + \beta_1 ROA_{it} + \beta_2 LOSS_{it} + \beta_3 CFO_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} \\ &+\beta_6 GROWTH_{it} + \beta_7 RETURN\_DEV_{it} + \beta_8 TURNOVER\_A_{it} + \beta_9 TURNOVER\_I_{it} \\ &+\beta_{10} AGE_{it} + \beta_{11} BRDSIZE_{it} + \beta_{12} BRDIND_{it} + \beta_{13} SUPERSIZE_{it} + \beta_{14} SUPERIND_{it} \\ &+\beta_{15} DUALITY_{it} + \beta_{16} AC\_EXP_{it} + \beta_{17} POLICON_{it} + \beta_{18} TOP3_{it} + \beta_{19} CODE\_STATE_{it} \\ &+\beta_{20} TRADABLE_{it} + \beta_{21} INSTITUTE_{it} + \beta_{22} CODE\_BIG4_{it} + \beta_{23} CODE\_BIG10_{it} \\ &+ \sum_{j=1}^{18} \gamma_j IND_{it} + \varphi_1 Y2010_{it}) + \varepsilon_{it} \end{aligned} \quad (1)$$

where Prob(*DISWEAK*) is the estimated probability of firms disclosing ICWs, which is determined based on a firm's economic characteristics, corporate governance, and ownership structure. Then, we calculate the inverse Mills' ratio from Model 1 and add it into the second-stage models (Models 2 and 5).

[10] For example, a Chinese firm listed in the Shenzhen Stock Exchange disclosed that due to a lack of proper approval procedures before signing guarantee contracts, this firm suffered a significant financial loss as the guarantor. Another firm reports that inadequate staffing in the internal audit committee has reduced the efficiency and effectiveness of internal monitoring. Thus, the non-accounting-related ICWs impede a firm's ability to effectively manage the potential business risks, which in turn affect the quality of financial information.

[11] As shown in our sample, Chinese listed firms disclose more non-accounting-related ICWs, with 36.3% ICWs disclosed being accounting-related, while 73.7% are non-accounting-related (Table 2, Panel B).

Following prior studies (Dechow, Sloan, & Sweeney, 1995; Jones, 1991; Kothari, Leone, & Wasley, 2005), our proxy to measure earnings quality is ABSDA. In our second-stage models, *ABSDA* is regressed against *DISWEAK* and other control variables in Model 2. The relationship between voluntary disclosure of ICWs and earnings quality (*ABSDA*) is presented by the coefficient of ϕ1. We expect ϕ1 to be positive and significant.

$$\begin{aligned} ABSDA_{it} &= \alpha_1 + \gamma_1 IMR\_DISWEAK_{it} + \phi_1 DISWEAK_{it} \\ &+\beta_1 ROA_{it} + \beta_2 CFO_{it} + \beta_3 LOSS_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 GROWTH_{it} \\ &+\beta_7 RETURN\_DEV_{it} + \beta_8 TURNOVER\_A_{it} + \beta_9 TURNOVER\_I_{it} \\ &+\beta_{10} AGE_{it} + \beta_{11} BRDSIZE_{it} + \beta_{12} BRDIND_{it} + \beta_{13} SUPERSIZE_{it} \\ &+\beta_{14} SUPERIND_{it} + \beta_{15} DUALITY_{it} + \beta_{16} AC\_EXP_{it} + \beta_{17} POLICON_{17} \\ &+\beta_{18} TOP3_{it} + \beta_{19} CODE\_STATE_{it} + \beta_{20} TRADABLE_{it} + \beta_{21} INSTITUTE_{it} \\ &+\beta_{22} CODE\_BIG4_{it} + \beta_{23} CODE\_BIG10_{it} \\ &+ \sum_{j=1}^{18} \gamma_j IND_{it} + \varphi_1 Y\,2010_{it} + \varepsilon_{it} \end{aligned} \tag{2}$$

IMR_DISWEAK is the inverse Mills' ratio calculated based on the estimated probability of firms disclosing ICWs in Model 1. *DISWEAK* is a dummy variable that equals 1 when firms disclose ICWs in ICRs, zero otherwise. We also include the following control variables based on previous research (Ashbaugh-Skaife, Collins, & Kinney, 2007; Ittonen, 2010): (1) financial performance (*ROA*, *LOSS*, *CFO*); (2) size (*SIZE*); (3) growth (*GROWTH*); (4) leverage (*LEV*); (5) risk (*RETURN_DEV*); (6) business complexity (*TURNOVER_A*, *TURNOVER_I*, *AGE*); (7) corporate governance (*BRDIND*, *BRDSIZE*, *SUPERSIZE*, *SUPERIND*, *DUALITY*, *AC_EXP*, *POLICON*); (8) ownership structure (*TOP3*, *CODE_STATE*, *TRADEABLE*, *INSTITUTE*); and (9) external auditor status (*CODE_BIG4*, *CODE_BIG10*).

ROA is net income or total profits after taxes divided by total assets. *LOSS* is an indicator that equals 1 when firm net income is negative, zero otherwise. *CFO* is total cash flow from operating activities, deflated by total assets at the beginning of the financial year. *SIZE* is the logarithm of total assets. *GROWTH* is measured based on change in total sales revenue divided by total sales revenue. *LEV* is the measurement of a firm's leverage, which equals total liability divided by total assets. *RETURN_DEV* is the measurement of risk, calculated based on the standard deviation of monthly returns over the 12 months of the financial year. We use three measures, *TURNOVER_A*, *TURNOVER_I*, and *AGE*, to measure business complexity. *TURNOVER_A* is measured using total accounts receivable divided by total sales revenue. *TURNOVER_I* is calculated using total inventory divided by total cost of goods sold. *AGE* is calculated based on the number of years firms have operated. *BRDIND* represents the percentage of independent directors on the board of directors (BOD). *BRDSIZE* is the logarithm of the number of directors. *SUPERSIZE* is the logarithm of the number of supervisors on the supervisory board. *SUPERIND* is the percentage of the number of non-paid supervisors on the supervisory board. *DUALITY* equals 1 if a CEO is also the chairperson of the BOD, zero otherwise. *AC_EXP* is the percentage of members of the audit committee with accounting, finance, or economic backgrounds. *POLICON* equals 1 if the CEO or chairman of the BOD is or was a representative of the National People's Congress, a government official, or military officer; it is zero otherwise. *TOP3* is the percentage of the top three shareholders' ownership interests in the firm. *CODE_STATE* is a dummy variable that equals 1 if the firm is a state-controlled firm based on information provided by the China Securities Index Ltd., zero otherwise. *TRADABLE* is the percentage of shares that can be traded without restriction on both exchanges. *INSTITUTE* is the percentage of shares held by management funds, and *CODE_BIG4* is a dummy variable that equals 1 if the firm's external audit firm is one of the Big 4 international firms (KPMG, Deloitte, PwC, or EY), zero otherwise. *CODE_BIG10* is another dummy variable that captures the impact of the top 10 local audit firms. The top 10 local audit firms are ranked by the Chinese Institute of Certified Public Accountants based on audit fees.[12] *CODE_BIG10* equals 1 if the firm's external audit firm is one of the top 10 local audit firms, zero otherwise. Subscript *i* represents a firm and *t* represents a year, either 2010 or 2011.

ABSDA used in Model 2 is estimated based on Models 3 and 4. Total accruals (*ACCRUAL*) in Model 3 are calculated as the difference between earnings (*EARNINGS*) and cash flows from operating activities (*CFO*). *CFO* represents net cash flows from operating activities. *ACCRUAL* is decomposed into discretionary accruals (*DAC*) and non-discretionary accruals (*NDAC*) via the modified Jones model (Dechow et al., 1995; Jones, 1991) with the addition of the lagged average return on assets (*ROA*) as a controlling variable, as suggested by Kothari et al. (2005) (Model 4). *DAC* represents the unexplained portion of observations (*εit*) based on Model 4. *ABSDA* is the absolute value of *DAC*.

$$ACCRUAL_{it} = EARNINGS_{it} - CFO_{it} \tag{3}$$

$$ACCRUAL_{it} = \beta_0 + \beta_1(\Delta REV_{it} - \Delta REC_{it}) + \beta_2 PPE_{it} + \beta_3 ROA_{it-1} + \varepsilon_{it} \tag{4}$$

where *EARNINGS* is operating profits divided by total assets at the beginning of year *t*; *CFO* is cash flows from operating activities divided by total assets at the beginning of year *t*; *ACCRUAL* is total accruals divided by total assets at the beginning

[12] It is interesting to note that after many years of reform in the audit market beginning from 1978, the international Big 4 firms have gained considerable market share in the Chinese audit market, ranked as the top four audit firms in China throughout the period 2008–2011 (Chinese Institute of Certified Public Accountants [CICPA], 2011). In recent years, the Chinese government has promulgated various policies to encourage development of local Chinese accounting firms. As a result, domestic audit firms have grown significantly in market share, especially large domestic firms. In our study, we pay particular attention to the differences between the Big 4 and top 10 local audit firms, and control both factors when we investigate the issue of ICW disclosure and earnings quality.

of year *t;* ΔREV is the change in revenue from year *t-1* to year *t*, divided by total assets at the beginning of year *t*; ΔRER is the change in accounts receivable from year *t-1* to year *t*, divided by total assets at the beginning of year *t*; *PPE* is gross property, plant and equipment in year *t*, divided by total assets at the beginning of year *t*; *ROA* is operating profits after tax divided by average total assets at year *t*; *i* is an observation for a firm, and *t* is an observation for a year. The coefficient of $\phi 1$ in Model 2 indicates an association between firm control weaknesses and discretional accruals. It is expected that *DISWEAK* is positively and statistically significantly associated with *ABSDA*, as the more ICWs firms have, the more likely firms are to have intentional and unintentional misstatements and hence, lower earnings quality. We also include control variables to control other factors that may have an impact on *ABSDA*. We expect that *ABSDA* is negatively related to *CFO*, since firms have less incentive to manage earnings if they have more cash (Dechow et al., 1995). ABSDA is positively related to leverage, growth, risk, and business complexity, according to previous research (Chan et al., 2008). The relationship between *ABSDA* and *SIZE* is expected to be positive, as smaller firms tend to have lower-quality accruals (Dechow & Dichev, 2002; Doyle et al., 2007). Previous research consistently finds that the improvement of corporate governance limits a firm's opportunities to manipulate earnings (Ahmed & Duellman, 2007; Liu & Lu, 2007). It is also shown that ownership-concentrated and state-controlled firms are more likely to engage in earnings management (Chen et al., 2006; Hu & Leung, 2012; Liu & Tian, 2012; Xu & Wang, 1999).

Table 1
Sample selection and industrial distribution.

Panel A: Sample selection procedure

	2010	2011	Total
Number of firms listed on main boards	1365	1389	2754
Number of firms providing ICRs	830	862	1692
Percentage of firms providing ICRs	60.8%	62.1%	61.44%
Less: number of firms with missing observations			
Market return data	23	45	68
Financial data	62	33	95
Corporate governance data	130	137	267
Ownership data	118	85	203
Subtotal	333	300	633
Final available data	497	562	1059

Panel B: Industry distribution by year

No	Industry code	Industry name	2010		2011		Total	
1	A	Agriculture	9	1.8%	9	1.6%	18	1.7%
2	B	Mining	18	3.6%	21	3.7%	39	3.7%
3	C	Manufacturing	268	53.9%	301	53.6%	569	53.7%
4	D	Utilities	32	6.4%	30	5.3%	62	5.9%
5	E	Construction	10	2.0%	16	2.8%	26	2.5%
6	F	Transportation	25	5.0%	35	6.2%	60	5.7%
7	G	IT	27	5.4%	32	5.7%	59	5.6%
8	H	Wholesale & Retail	38	7.6%	38	6.8%	76	7.2%
9	J	Real Estate	35	7.0%	43	7.7%	78	7.4%
10	K	Social Service	13	2.6%	17	3.0%	30	2.8%
11	L	Media	4	0.8%	4	0.7%	8	0.8%
12	M	Conglomerates	18	3.6%	16	2.8%	34	3.2%
	Total		497	100.0%	562	100.0%	1059	100.0%

Panel C: Industry distribution by exchange

No.	Industry code	Industry name	Shanghai		Shenzhen		Total	
1	A	Agriculture	10	1.9%	8	1.5%	18	1.7%
2	B	Mining	19	3.7%	20	3.7%	39	3.7%
3	C	Manufacturing	273	53.0%	296	54.4%	569	53.7%
4	D	Utilities	34	6.6%	28	5.1%	62	5.9%
5	E	Construction	21	4.1%	5	0.9%	26	2.5%
6	F	Transportation	42	8.2%	18	3.3%	60	5.7%
7	G	IT	34	6.6%	25	4.6%	59	5.6%
8	H	Wholesale & Retail	30	5.8%	46	8.5%	76	7.2%
9	J	Real Estate	26	5.0%	52	9.6%	78	7.4%
10	K	Social Service	6	1.2%	24	4.4%	30	2.8%
11	L	Media	4	0.8%	4	0.7%	8	0.8%
12	M	Conglomerates	16	3.1%	18	3.3%	34	3.2%
	Total		515	100.0%	544	100.0%	1059	100.0%

In our second-stage regression, we further divide overall ICWs into accounting-related and non-accounting-related ICWs, *DISWEAK_ACC* and *DISWEAK_NONACC* in Model 5, to test whether accounting-related or non-accounting-related ICWs are associated with earnings quality. *DISWEAK_ACC* is a dummy variable that equals 1 if firms disclose accounting-related weaknesses and zero otherwise, while *DISWEAK_NONACC* is a dummy variable that equals 1 if firms disclose non-accounting-related weaknesses, zero otherwise. We expect that both the $\phi 1$ of *DISWEAK_ACC* and $\phi 2$ of *DISWEAK_NONACC* in Model 5 are positive and statistically significant.

$$\begin{aligned} ABSDA_{it} &= \alpha_1 + \gamma_1 IMR\_DISWEAK_{it} + \phi_1 DISWEAK\_ACC_{it} + \phi_2 DISWEAK\_NONACC_{it} \\ &+\beta_1 ROA_{it} + \beta_2 CFO_{it} + \beta_3 LOSS_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 GROWTH_{it} \\ &+\beta_7 RETURN\_DEV_{it} + \beta_8 TURNOVER\_A_{it} + \beta_9 TURNOVER\_I_{it} \\ &+\beta_{10} AGE_{it} + \beta_{11} BRDSIZE_{it} + \beta_{12} BRDIND_{it} + \beta_{13} SUPERSIZE_{it} \\ &+\beta_{14} SUPERIND_{it} + \beta_{15} DUALITY_{it} + \beta_{16} AC\_EXP_{it} + \beta_{17} POLICON_{17} \\ &+\beta_{18} TOP3_{it} + \beta_{19} CODE\_STATE_{it} + \beta_{20} TRADABLE_{it} + \beta_{21} INSTITUTE_{it} \\ &+\beta_{22} CODE\_BIG4_{it} + \beta_{23} CODE\_BIG10_{it} \\ &+ \sum_{j=1}^{18} \gamma_j IND_{it} + \varphi_1 Y2010_{it} + \varepsilon_{it} \end{aligned} \tag{5}$$

5. Sample selection and descriptive statistics

5.1. Sample selection

Our sample consists of publicly listed firms on the Shanghai Stock Exchange and Shenzhen Stock Exchange that issued ICRs voluntarily in 2010 and/or 2011. According to Table 1, Panel A, 60.8% of listed firms provided ICRs in 2010, and 62.1% of listed firms provided ICRs in 2011. After deducting missing data, our final sample includes 1059 observations (497 observations in 2010 and 562 observations in 2011). We manually collected all ICW data from ICRs released by these 1059 firms on the two exchanges' websites. Ownership structure data as well as market and accounting information data were collected from the China Stock Market & Accounting Research database.

We eliminate firms from the finance sector, which is subject to a different set of regulations; the industry distributions are shown in Panel B of Table 1.[13] The top five sectors of the sample firms are the manufacturing sector (53.7%), the real estate sector (7.4%), wholesale and retail sector (7.2%), utilities sector (5.9%), and transportation sector (5.7%).

Our sample is dominated by the manufacturing sector, which reflects the same pattern for all listed firms on the two Chinese stock exchanges. This industrial distribution also mirrors the structural development of the Chinese economy, which has largely benefitted from its manufacturing sector and booming prices in real estate. Industry distribution by stock exchange is shown in Panel C of Table 1. This panel shows that 48.6% of our sample firms are listed on the Shanghai Stock Exchange, while 51.4% are listed on the Shenzhen Stock Exchange.

5.2. Information disclosed in ICRs

The disclosure pattern of ICWs is shown in Table 2. According to Panel A, 197 out of 497 listed firms issued ICRs with no ICW in 2010, and 274 out of 562 listed firms issued ICRs with no ICW in 2011. The severity of the ICWs is measured by ICW score. According to the *Basic Standard*, a firm needs to identify the level of severity of each ICW in its ICRs. Three levels of ICW severity are stipulated in the *Basic Standard*: minor, major, and serious. We calculate the ICW score by multiplying the frequency of ICWs and the level of severity of ICWs. The severity of weaknesses is coded 0 – no weakness, 1 – minor weakness, 2 – major weakness, and 3 – serious weakness. For example, if a firm reports two minor weaknesses, three major weaknesses, and two serious weaknesses, the total ICW score for this firm would be 14 ($14 = 2 \times 1 + 3 \times 2 + 2 \times 3$).

As shown in Panel A of Table 2, on average, 44.5% of firms report not having any ICW; 11.3% of firms report the severity of ICWs as 1; 10.3% of firms disclose the level of severity as 2. Furthermore, 33.9% of firms report the severity at level 3 or above. Comparing 2011 with 2010, the percentage of firms disclosing no ICWs increased from 39.6% in 2010 to 48.8% in 2011. On the other hand, firms disclosing ICWs decreased from 60.4% in 2010 to 51.2%. The percentage (number) of firms to have their ICRs audited increased from 28.4% (141 firms) in 2010 to 35.4% (199 firms) in 2011.

We divide ICWs into two types: accounting-related versus non-accounting-related ICWs according to the *Internal Control Application Guidelines*. Panel B of Table 2 provides information about the two types of ICWs voluntarily disclosed by listed firms in 2010 and 2011. ICWs disclosed in accounting-related areas account for 34.5% in 2010 and 20.5% in 2011. The decrease over the two years is significant. The percentages of ICWs disclosed in non- accounting-related areas are 65.5% in 2010 and 79.5% in 2011. The results show that Chinese listed firms have more ICWs in non-accounting-related areas than in accounting-related areas. Therefore, management needs to pay more attention to non-accounting-related areas to improve the overall quality of internal control.

[13] Industries are classified according to the CSRC's Guideline on Industry Classification of Listed Companies (CSRC, 2012).

Table 2
Disclosures of internal control weaknesses.

Panel A: Overall internal control weakness scores

ICW score	2010 No. of firms	%	2011 No. of firms	%	Total no. of firms	%
0	197	39.6%	274	48.8%	471	44.5%
1	65	13.1%	55	9.8%	120	11.3%
2	65	13.1%	44	7.8%	109	10.3%
3	61	12.3%	36	6.4%	97	9.2%
4	43	8.7%	35	6.2%	78	7.4%
5	21	4.2%	27	4.8%	48	4.5%
6	18	3.6%	26	4.6%	44	4.2%
7	9	1.8%	10	1.8%	19	1.8%
8	3	0.6%	15	2.7%	18	1.7%
9	5	1.0%	13	2.3%	18	1.7%
10	2	0.4%	12	2.1%	14	1.3%
11	1	0.2%	1	0.2%	2	0.2%
12	3	0.6%	4	0.7%	7	0.7%
13	1	0.2%	2	0.4%	3	0.3%
14	0	0.0%	3	0.5%	3	0.3%
15	2	0.4%	0	0.0%	2	0.2%
16	0	0.0%	3	0.5%	3	0.3%
20	0	0.0%	1	0.2%	1	0.1%
22	1	0.2%	0	0.0%	1	0.1%
65	0	0.0%	1	0.2%	1	0.1%
Total firms	497	100.0%	562	100.0%	1059	100.0%
ICRs that have been audited	141	28.4%	199	35.4%	340	32.1%

*ICW scores are calculated by multiplying the number of weaknesses reported with severity of weakness. The severity of weaknesses is coded as 0 – no weakness, 1 – minor weakness, 2 – major weakness, and 3 – serious weakness. The reporting of three levels, minor, major and serious of ICW severity is required by the *Basic Standard*. For example if a firm reports three minor weaknesses, four major weaknesses, and one serious weakness, the total ICW score for this firm would be 14 ($14 = 3 \times 1 + 4 \times 2 + 1 \times 3$).

Panel B: Areas of internal control weaknesses

		2010		2011		Total	
Internal control weakness areas	Item no.	Score	%	Score	%	Score	%
Accounting-related							
Finance and investment	6	154	15.0%	81	5.9%	235	9.8%
Procurement	7	29	2.8%	20	1.5%	49	2.0%
Asset management	8	36	3.5%	27	2.0%	63	2.6%
Sales	9	44	4.3%	32	2.3%	76	3.2%
Financial reporting	14	73	7.1%	111	8.1%	184	7.7%
Budgeting	15	18	1.8%	10	0.7%	28	1.2%
Subtotal		354	34.5%	281	20.5%	635	26.5%
Non-accounting-related							
Organizational structure	1	140	13.6%	341	24.9%	481	20.1%
Development of strategy	2	12	1.2%	5	0.4%	17	0.7%
Human resource management	3	142	13.8%	217	15.9%	359	15.0%
Social responsibility	4	11	1.1%	4	0.3%	15	0.6%
Organizational culture	5	41	4.0%	77	5.6%	118	4.9%
Research and development	10	4	0.4%	4	0.3%	8	0.3%
Construction projects	11	12	1.2%	13	0.9%	25	1.0%
Guarantee	12	21	2.0%	5	0.4%	26	1.1%
Outsourcing	13	3	0.3%	5	0.4%	8	0.3%
Contract management	16	13	1.3%	10	0.7%	23	1.0%
Internal reporting system	17	23	2.2%	71	5.2%	94	3.9%
IT system	18	34	3.3%	26	1.9%	60	2.5%
Not specified	19	217	21.1%	310	22.6%	527	22.0%
Subtotal		673	65.5%	1088	79.5%	1761	73.5%
TOTAL scores		1027	100.0%	1369	100.0%	2396	100.0%

There are six accounting-related ICW areas: finance and investment, procurement, asset management, sales, financial reporting, and budgeting. Among these, most accounting-related ICWs are reported in finance and investment (9.8%), followed by financial reporting (7.7%) and sales (3.2%). It is evident that China SOX has a much broader scope than the U.S. SOX. In China, financial reporting is only one of the accounting-related areas, and ICWs reported in this area only account for 7.7% of the total ICWs reported.

The 12 non-accounting-related ICW areas are: organizational structure, development of strategy, human resource management, social responsibility, organizational culture, research and development, construction projects, guarantee,

outsourcing, contract management, internal reporting system, and IT system. Of the twelve non-accounting ICW areas, organizational structure has the highest number of ICW disclosures, with an average of 20.1% over two years. The high level of ICW disclosure in this area indicates that many firms are weak in their monitoring mechanism, possibly resulting in poor internal control. Following organizational structure, the second-most common ICW area is human resource management (15%), which includes issues related to staff selection, appointment, and training.

Firms disclosing ICWs always address their remediation measures along with their ICWs in one of the sections of ICRs—internal control weakness and remediation. In this section, some firms disclose their intended remediation measures, while other firms disclose both implemented remediation measures and related outcomes.[14]

5.3. Descriptive statistics

The basic descriptive statistical analysis for each of the testing and control variables is reported in Table 3.[15] According to Panel A of Table 3, the mean of the measurement of earnings quality (*ABSDA*) is 0.06, and the median of *ABSDA* is 0.042. The means of the disclosure level of ICW (*DISWEAK*) and the ICW score (*DISSCORE*) are 0.5552 and 2.2625, respectively, meaning that more than half of firms disclose ICWs. The average ICW score is 2.2625. The maximum disclosure score is 65, which represents 65 minor ICWs disclosed by one firm in its ICR. Regarding the two types of weakness, the mean of accounting-related ICWs is 0.2417 (*DISWEAK_ACC*), and 0.5382 (*DISWEAK_NONACC*) is the mean of non-accounting-related ICWs, implying that firms are twice as likely to have non-accounting-related weaknesses than accounting-related weaknesses. Similar results are found under the measures of ICW scores, with the mean of *DISSCORE* for accounting-related ICWs at 0.5996, while for non-accounting-related ICWs, it is 1.6629.

For the control variables of firm characteristics, the mean of *ROA* is 0.0597, and the mean of *CFO* is 0.0459. Some 5.95% of sample firms make losses. The mean of *SIZE* is 22.4987 (median, 22.3551), and the standard deviation of *SIZE* is only 1.3283. The average of leverage (*LEV*) of the sample firms is 53.05%, and the average growth rate (*GROWTH*) is 32.62%. The mean of the standard deviation of monthly returns over the financial year (*RETURN_DEV*), which is the measurement of risk, is 0.1154. Firm age ranges from 2 years to 29 years. The average of operating years is 15.0788 years.[16] In terms of corporate governance variables, the mean of the logarithm of number the directors in the BOD (*BRDSIZE*) is 2.2187, and the mean of the logarithm of the number of supervisors on the supervisory board (*SUPERSIZE*) is 1.3504. Of the sample firms, 12.37% have the chairperson of the BOD also serving as CEO. On average, 37.11% of members of the BOD are independent directors, while 39% of members of the supervisory board are non-paid supervisors. Table 3 also shows that on average, more than 57.64% of members of the audit committee have financial expertise, and 22.57% of sample firms are identified as politically connected firms.

In terms of ownership structure variables, the mean of the top three shareholdings (*TOP3*) is 17.93%, and 72.52% of our sample firms are state-controlled. The tradability of shares is 85.05%. On average, the institutional ownership (*INSTITUTE)* is 6.71%. As shown in Table 3, only 10% of sample firms choose BIG 4 audit firms (*CODE_BIG4*) as their external auditors, while nearly 50% of sample firms elect to have Big 10 local audit firms (*CODE_BIG10*) as their external auditors. These statistics depict the dynamic change in the Chinese audit market (Chinese Institute of Certified Public Accountants [CICPA], 2011; Firth, Rui, & Wu, 2012; Mo, Rui, & Wu, 2015).

Panel B of Table 3 compares the differences in testing and controlling variables between firms disclosing ICWs and firms not disclosing ICWs. Firms disclosing ICWs have higher discretionary accruals than firms not disclosing ICWs. The mean of *ASBDA* for firms disclosing ICWs is 0.0631, while the mean of *ABSDA* is 0.0561 for firms not disclosing ICWs. The *t*-test indicates that the two groups' *ABSDA* means are statistically different. Firms not disclosing ICWs have higher profitability and less percentage of loss-making than firms disclosing ICWs. The average size of firms not disclosing ICWs is 22.7488, while the average size of firms disclosing ICWs is 22.2983. The difference in size is also statistically significant.

Other significant differences between the two groups are found in leverage and risks. Firms not disclosing ICWs have higher leverages but lower risks, measured by standard deviation of returns (*RETURN_DEV*). On average, firms not disclosing ICWs are younger than firms disclosing ICWs.

For variables in corporate governance, firms not reporting ICWs have larger boards of directors and more independent supervisory boards. These results are consistent with findings from prior literature that better corporate governance can improve risk management and internal control and reduce the likelihood of reporting ICWs (Dhaliwal, Hogan, et al., 2011; Doyle et al., 2007). Panel B of Table 3 also shows that firms not reporting ICWs are less likely to be politically connected but have lower

[14] For example, a listed firm reports four ICWs in its 2010 ICR. They are: (1) the internal control systems over internal authorization, procurement activities, and information disclosure have not yet been completed; (2) there is a lack of a well-established internal control system over risk identification and risk management; (3) the internal control system of newly acquired subsidiaries is still weaker than the internal control system of the parent company; and (4) because it is limited by human resources, a proper monitoring mechanism over the implementation of internal control is lacking. Then, in the internal control weakness and remediation section of its ICR, this firm reports the following remedies that have been implemented: (1) in order to strengthen the monitoring over the implementation of internal control, our company has expanded the internal audit department through new recruitment; (2) in order to improve the internal control system over information disclosure and financial reporting, our company has issued new internal control regulations on information disclosure and financial reporting; (3) the company has organized various training for employees to build up their awareness of risk identification and risk management; and (4) the company has purchased new computer software to assist with risk identification and management. Finally, this firm assesses the outcomes of remediation and states that "by the end of the financial year, 90% of remediation measures have been implemented successfully."

[15] All continuous variables have been winsorized at the top and bottom 1%.

[16] Unlike Ge and McVay (2005), who use the number of years the firm has share price data available on the database as the proxy for firm experience in internal control reporting, we use the exact longevity or operating years of the sample firms in our study.

Table 3
Basic descriptive statistical analysis.

Panel A: Descriptive statistics for all firms providing ICRs

	Mean	Median	Max.	Min.	Std. Dev.	Firms
Testing variables						
DISWEAK	0.5552	1.0000	1.0000	0.0000	0.4972	1059
DISWEAK_ACC	0.2417	0.0000	1.0000	0.0000	0.4283	1059
DISWEAK_NONACC	0.5382	1.0000	1.0000	0.0000	0.4988	1059
DISSCORE	2.2625	1.0000	65.0000	0.0000	3.5923	1059
DISSCORE_ACC	0.5996	0.0000	14.0000	0.0000	1.4499	1059
DISSCORE_NONACC	1.6629	1.0000	65.0000	0.0000	2.8746	1059
ABSDA	0.0600	0.0420	0.3717	0.0000	0.0607	1059
Firm characteristics						
ROA	0.0597	0.0453	0.6393	-0.1589	0.0744	1059
LOSS	0.0595	0.0000	1.0000	0.0000	0.2367	1059
CFO	0.0459	0.0439	0.4839	-0.3736	0.1096	1059
SIZE	22.4987	22.3551	27.7533	18.5865	1.3283	1059
GROWTH	0.3265	0.2041	10.4625	-0.6894	0.8459	1059
LEV	0.5305	0.5437	1.2399	0.0535	0.1887	1059
RETURN_DEV	0.1154	0.1118	0.2887	0.0509	0.0335	1059
TURNOVER_A	0.1184	0.0802	1.0194	0.0000	0.1340	1059
TURNOVER_I	0.8499	0.2390	21.0149	0.0000	2.0771	1059
AGE	15.0708	15.0000	29.0000	2.0000	3.8325	1059
Corporate governance						
BRDSIZE	2.2187	2.1972	2.8332	1.6094	0.1983	1059
BRDIND	0.3711	0.3333	0.5714	0.2500	0.0570	1059
SUPERSIZE	1.3504	1.0986	2.1972	0.6931	0.3025	1059
SUPERIND	0.3900	0.4000	1.0000	0.0000	0.2808	1059
DUALITY	0.1237	0.0000	1.0000	0.0000	0.3294	1059
AC_EXP	0.5764	0.6670	1.0000	0.0000	0.2749	1059
POLICON	0.2257	0.0000	1.0000	0.0000	0.4182	1059
Ownership structure						
TOP3	0.1793	0.1519	0.5924	0.0086	0.1332	1059
TOP10	0.1805	0.1525	0.5927	0.0095	0.1328	1059
CODE_STATE	0.7252	1.0000	1.0000	0.0000	0.4466	1059
TRADABLE	0.8505	0.9958	1.0000	0.1335	0.2251	1059
INSTITUTE	0.0671	0.0315	0.3689	0.0000	0.0829	1059
External Auditor						
CODE_BIG4	0.1001	0.0000	1.0000	0.0000	0.3003	1059
CODE_BIG10	0.4693	0.0000	1.0000	0.0000	0.4993	1059

Panel B: Comparison between firms disclosing ICWs and firms not disclosing ICWs

	Firms not disclosing ICWs ($n = 471$) Mean	Firms disclosing ICWs ($n = 588$) Mean	*t*-tests	*p*-values (2 tailed)
ABSDA	0.0561	0.0631	-1.8623	0.0628
ROA	0.0640	0.0562	1.7091	0.0877
CFO	0.0421	0.0489	-1.0007	0.3172
SIZE	22.7488	22.2983	5.5607	0.0000
GROWTH	0.3091	0.3404	-0.5988	0.5494
LEV	0.5441	0.5195	2.1089	0.0352
RETURN_DEV	0.1128	0.1175	-2.3063	0.0213
TURNOVER_A	0.1167	0.1198	-0.3643	0.7157
TURNOVER_I	0.7939	0.8948	-0.7854	0.4324
AGE	14.4140	15.5969	-5.0489	0.0000
BRDSIZE	2.2358	2.2050	2.5210	0.0118
BRDIND	0.3735	0.3691	1.2457	0.2131
SUPERSIZE	1.3564	1.3455	0.5803	0.5618
SUPERIND	0.4179	0.3676	2.9036	0.0038
AC_EXP	0.5548	0.5936	-2.2896	0.0222
TOP3	0.2109	0.1539	7.0711	0.0000
TOP10	0.2122	0.1551	7.1115	0.0000
TRADABLE	0.8447	0.8552	-0.7577	0.4488
INSTITUTE	0.0665	0.0676	-0.2234	0.8233

Dummy control variables	Firms not disclosing ICWs ($n = 471$) Frequency	Firms disclosing ICWs ($n = 588$) Frequency	Chi-tests	*p*-value (2-tailed)
LOSS	0.0425	0.0731	3.8646	0.0493

Table 3 *(continued)*

Dummy control variables	Firms not disclosing ICWs ($n = 471$) Frequency	Firms disclosing ICWs ($n = 588$) Frequency	Chi-tests	p-value (2-tailed)
DUALITY	0.1146	0.1310	0.4996	0.4797
POLICON	0.1996	0.2466	3.0455	0.0810
CODE_STATE	0.7622	0.6956	0.0010	0.9753
CODE_BIG4	0.1465	0.0629	19.3603	0.0000
CODE_BIG10	0.4416	0.4915	2.4164	0.1201

DISWEAK = 1 if firms disclose internal control weaknesses, 0 otherwise; DISWEAK_ACC = 1 if firms disclose accounting-related internal control weaknesses, 0 otherwise; DISWEAK_NOACC = 1 if firms disclose non-accounting-related internal control weaknesses, 0 otherwise; DISSCORE = number of ICWs multiples level of severity of ICWs; Severity of ICWs is coded 0 – no weakness, 1 – minor weakness, 2 – major weakness, and 3 – serious weakness; DISSCORE_ACC = - number of accounting-related ICWs multiples level of severity of ICWs; DISSCORE_NOACC = number of non-accounting-related ICWs multiples level of severity of ICWs; ABSDA = absolute discretional accruals; ROA = net income or total profits after taxes divided by total assets; LOSS = 1 if net income in firms is negative, 0 otherwise; CFO = total cash flows from operating activities deflated by total assets at the beginning of the financial year; SIZE = logarithm of total assets; GROWTH = changes of sales revenues divided by sales revenues; LEV = total liability divided by total assets; RETURN_DEV = standard deviation of monthly returns over the 12 months of the financial year; TURNOVER_A = total accounts receivable divided by total sales revenue; TURNOVER_I = total inventory divided by total cost of goods sold; AGE = number of years firms have operated, BRDSIZE = logarithm of the number of directors on the BOD; BRDIND = percentage of independent directors on the BOD; SUPERSIZE = logarithm of number of supervisors on the supervisory board; SUPERIND = percentage of number of non-paid supervisors on the supervisory board; DUALITY = 1 if a CEO is also the chairperson of the BOD, 0 otherwise; AC_EXP is the percentage of members with accounting, finance or economic background on the audit committee; POLICON equals 1 if CEO or chairman of BOD is or was a representative of the National People's Congress, a government official or military officer, 0 otherwise; TOP3 = percentage of the top three shareholders' ownership interests in the firms; TOP10 = - percentage of the top ten shareholders' ownership interests in the firms; CODE_STATE = 1 if the firm is a state-controlled firm, 0 otherwise; TRADABLE = - percentage of shares that can be traded without any restrictions; INSTITUTE = percentage of shares held by management funds; CODE_BIG4 = if Big 4 audit firms, 0 otherwise; CODE_BIG10 = 1 if top 10 Chinese local audit firm, 0 otherwise.

percentage of members with accounting, finance, or economic background in audit committees. In terms of ownership structure, firms not disclosing ICWs have higher ownership concentration, measured by *TOP3* or *TOP10*, than firms disclosing ICWs. This result supports the alignment effect (Jensen & Meckling, 1976).[17] For external auditors, firms not revealing ICWs are more likely to engage Big 4 auditors, but the percentages for those using the top 10 local audit firms are not significantly different between the two groups.

6. Empirical results and analysis

6.1. Earnings quality and disclosure of ICWs

Table 4 provides results addressing whether disclosure of ICW influences earnings quality in terms of *ABSDA*. Model 2 tests the association between ICW disclosure and *ABSDA*, while Model 5 examines the relationship between different types of ICW and *ABSDA*. As discussed above, discretionary accruals are calculated via the modified Jones model (Dechow et al., 1995; Jones, 1991) with added lagged *ROA* as a controlling variable (Kothari et al., 2005).

According to Table 4, the coefficient of *DISWEAK* in Model 2 is 0.0087 and is positively and significantly associated with *ABSDA* ($p = 0.0081$, one-tailed) after controlling for sample selection bias. As a higher value of *ABSDA* represents lower earnings quality, such positive associations imply that firms with ICWs have poorer earnings quality. This is consistent with the Doyle et al. (2007) finding in the U.S. setting that firms with MWs have poorer earnings quality. Our results support H1; that is, earnings quality is associated with disclosure of ICWs.

With regard to our control variables, in Model 2, loss-making firms (*LOSS*), high-geared firms (*LEV*), and firms with longer business cycles (*TURNOVER_I*) are positively and significantly associated with higher *ABSDA*. Growth (*GROWTH*) and firm size (*SIZE*) are negatively associated with *ABSDA*. These results are consistent with previous findings that earnings quality is associated with certain firm characteristics; for example, smaller firms tend to have lower earnings quality (Ashbaugh-Skaife et al., 2007; Dechow & Dichev, 2002). Furthermore, prior studies find that firms with better performance (*ROA*) are more likely to engage in earnings management, resulting in higher *ABSDA* (Dechow & Dichev, 2002). The coefficient of *ROA* in Model 2 is positive and significant, supporting this view. Previous research shows that firms with more cash flow are less likely to manipulate earnings, resulting in lower *ABSDA* (Goh & Li, 2011). Our results on the coefficients of *CFO* also support this view.

In terms of the association between earnings quality and corporate governance characteristics, the coefficient on board size (*BRDSIZE*) is negative and significant in Model 2, suggesting that the larger a firm's board is, the lower is its *ABSDA*, which represents a higher earnings quality (Ahmed & Duellman, 2007). The coefficient on independence of the supervisory board (*SUPERIND*) is negative and significant, implying that the more effective a firm's supervisory board is, the higher is its earnings quality. However, our results on independence of BOD and the size of supervisory board show no significant relationships with earnings quality. The reason is that following SOX in the United States and similar corporate governance reforms in other Western

[17] According to agency theory, agency costs are reduced as the owner-manager's holding is increased. Therefore, the interests of the owner and outside shareholders become aligned. A positive relationship is expected between earnings quality and the concentration of ownership. It is called the "convergence of interest" or "alignment effect" (Jensen & Meckling, 1976).

Table 4
Relationship between disclosure of internal control weaknesses and absolute discretionary accruals.

Dependent variable: ABSDA		Model 2			Model 5		
Independent variables	Sign	Coeff.	t-stats	Coeff.	Coeff.	t-stats	Coeff.
C		0.0793	1.4367	0.0756	0.0811	1.4664	0.0706
IMR_DISWEAK	?	0.4122	2.2141	0.0135	0.4100	2.1689	0.0139
DISWEAK	+	0.0087	2.4080	0.0081			
DISWEAK_ACC	+				0.0068	1.3546	0.0649
DISWEAK_NOACC	+				0.0064	1.6729	0.0527
ROA	+	0.1848	2.3363	0.0099	0.1876	2.3612	0.0090
CFO	–	−0.0612	−1.4866	0.0687	−0.0623	−1.4815	0.0650
LOSS	+	0.0406	4.4990	0.0000	0.0401	4.4800	0.0000
SIZE	?	−0.0058	−2.4044	0.0082	−0.0058	−2.2986	0.0084
LEV	+	0.0298	1.9225	0.0274	0.0300	1.9071	0.0263
GROWTH	?	−0.0025	−0.6769	0.2493	−0.0026	−0.7062	0.2359
RETURN_DEV	+	0.0001	0.0023	0.4991	0.0013	−0.0121	0.4914
TURNOVER_A	+	0.0083	0.5725	0.2836	0.0079	0.5847	0.2937
TURNOVER_I	+	0.0056	2.9809	0.0015	0.0056	2.9261	0.0014
AGE	?	0.0031	2.3699	0.0090	0.0031	2.3432	0.0092
BRDSIZE	?	−0.0433	−2.0858	0.0186	−0.0435	−2.0948	0.0180
BRDIND	–	−0.0401	−0.8211	0.2059	−0.0395	−0.7822	0.2095
SUPERSIZE	?	−0.0019	−0.2675	0.3946	−0.0020	−0.2794	0.3912
SUPERIND	–	−0.0191	−1.7518	0.0401	−0.0193	−1.7554	0.0380
DUALITY	+	−0.0033	−0.5817	0.2805	−0.0032	−0.5779	0.2881
AC_EXP	–	0.0248	1.9821	0.0239	0.0240	1.9813	0.0275
POLICON	+	0.0097	1.5693	0.0585	0.0096	0.1432	0.0606
TOP3	+	−0.1257	−1.9865	0.0236	−0.1243	−1.9404	0.0248
CODE_STATE	+	0.0015	0.3346	0.3690	0.0018	0.2852	0.3427
TRADABLE	–	−0.0381	−2.3107	0.0105	−0.0379	−2.2895	0.0109
INSTITUTE	–	−0.0060	−0.2237	0.4116	−0.0051	−0.3285	0.4256
CODE_BIG4	–	−0.0258	−2.2872	0.0112	−0.0256	−2.2809	0.0118
CODE_BIG10	–	0.0000	−0.0005	0.4998	−0.0001	−0.0131	0.4935
Industries		Yes			Yes		
Years		Yes			Yes		
R-squared		0.2171			0.2192		
Adjusted R-squared		0.1831			0.1845		
F-statistic		6.3889			6.3181		
Prob(F-statistic)		0.0000			0.0000		
Durbin-Watson stat		1.8517			1.8520		
Observations		1059			1059		

ABSDA = absolute discretionary accruals; IMR_DISWEAK = inverse Mill's ratio; DISWEAK = 1 if firms disclose ICWs, 0 otherwise; ROA = return on assets; CFO = cash flow from operating activities; LOSS = loss making; SIZE = logarithm of total assets; LEV = total liability divided by total assets; GROWTH = changes of sales revenues divided by sales revenue; RETURN_DEV = standard deviation of monthly returns over the 12 months of the financial year; TURNOVER_A = total accounts receivable divided by total sales revenue; TURNOVER_I = total inventory divided by total costs of goods sold; AGE = number of years firms have operated. BRDSIZE = logarithm of number of directors on the BOD; BRDIND = percentage of independent directors on the BOD; SUPERSIZE = logarithm of number of supervisors on the supervisory board; SUPERIND = percentage of number of non-paid supervisors on the supervisory board; DUALITY = 1 if a CEO is also chairperson of the BOD, 0 otherwise; AC_EXP is the percentage of members with accounting, finance, or economic background in audit committee; POLICON equals 1 if CEO or chairman of BOD is or was a representative of the National People's Congress, a government official, or military officer, 0 otherwise; TOP3 = percentage of top three shareholders' ownership interests in the firms; CODE_STATE = 1 if firm is a state- controlled firm, 0 otherwise; TRADABLE = percentage of shares that can be traded without any restrictions; INSTITUTE = percentage of shares held by management funds; CODE_BIG4 = if Big 4 audit firms, 0 otherwise; CODE_BIG10 = 1 if in top 10 Chinese local audit firms, 0 otherwise. *p*-values are one-tailed.

countries, CSRC issued the *Code of Corporate Governance for Listed Companies in China* in 2002 (CSRC, 2002), but the introduction of Western-style corporate governance systems into Chinese listed firms may not have been as effective as intended (Cho & Rui, 2009; Firth, Fung, & Rui, 2007).

With regard to ownership variables, the coefficient on the association of earnings quality and concentration of ownership (*TOP3*) is significant and negative, suggesting that firms with more concentrated ownership will be more likely to be associated with higher earnings quality. The results also show a negative relationship between the tradability of shares and earnings quality (coefficient of *TRADABLE* = −0.0381, $p = 0.0105$), and firms audited by the Big 4 have lower discretionary accruals.

6.2. Earnings quality and types of ICW

Regression results for the relationship between different types of ICW and *ABSDA* are tabulated in Model 5 of Table 4. The coefficients of two measures: *DISWEAK_ACC* and *DISWEAK_NOACC* in Model 5 are significantly positive. The coefficient of *DISWEAK_ACC* is 0.0068 ($p = 0.0649$, one-tailed), and the coefficient of *DISWEAK_NOACC* is 0.0064 ($p = 0.0527$, one-tailed). These results indicate that H2a and H2b, in regard to the existence of different types of ICWs, are supported.

One reason that non-accounting-related ICWs can impact earnings quality may be that users regard ICWs in non-accounting-related areas as leading indicators of problems in the internal control system. These non-accounting related ICWs will eventually

compromise the integrity of the financial reporting system. Firms with non-accounting-related ICWs are more likely to incur intentional and unintentional errors. This finding is further supported by some direct and anecdotal evidence on Chinese firms' ICRs. For example, one firm points out, in its ICR, that "internal control is not efficient and effective due to lack of appropriate staffing. This will, in turn, affect quality of financial reports." Another firm states, "to prevent the accounting errors occurred in the financial reports, the firm should further strengthen personnel training for the BOD, Supervisory Board, senior management team as well as all accountants in relevant departments, with an aim to improving their awareness of the importance of internal control and essential mechanisms in the internal control system."

6.3. The impact of severity of ICWs on earnings quality

We have applied two-stage models to examine the association between ICW disclosure and earnings quality. Under the two-stage models, the measurement of ICW disclosure can only be a dummy variable (*DISWEAK*). *DISWEAK* equals 1 when firms disclose ICWs in ICRs, zero otherwise. Since a further question can arise as to what is the relationship between earnings quality and the seriousness of ICWs, we use a continuous variable of *DISSCORE* as a measurement of severity of ICWs in Model 6. *DISSCORE* is calculated by multiplying the frequencies of ICWs and the three levels of severity of ICW. The three levels of severity of weaknesses is coded as 0 – no weakness, 1 – minor weakness, 2 – major weakness, and 3 – serious weakness. The reporting of

Table 5
Relationship between disclosure scores of internal control weaknesses and absolute discretionary accruals.

Dependent variable: ABSDA		Model 6			Model 6		
Independent variables	Sign	Coeff.	t-stats	Prob.	Coeff.	t-stats	Prob.
C		0.0981	1.7864	0.0372	0.0981	1.7856	0.0373
DISSCORE	+	0.0010	2.0490	0.0204			
DISSCORE_ACC	+				0.0015	1.1691	0.1213
DISSCORE_NOACC	+				0.0008	1.2920	0.0984
ROA	+	0.3366	8.9532	0.0000	0.3365	8.9462	0.0000
CFO	–	−0.1407	−7.2943	0.0000	−0.1408	−7.2928	0.0000
LOSS	+	0.0317	3.8815	0.0001	0.0316	3.8661	0.0001
SIZE	?	−0.0030	−1.4727	0.0706	−0.0029	−1.4656	0.0716
LEV	+	0.0521	4.4583	0.0000	0.0522	4.4649	0.0000
GROWTH	?	−0.0079	−3.1053	0.0010	−0.0079	−3.1062	0.0010
RETURN_DEV	+	0.0202	0.3477	0.3641	0.0208	0.3562	0.3609
TURNOVER_A	+	0.0097	0.6689	0.2519	0.0098	0.6759	0.2497
TURNOVER_I	+	0.0024	2.1224	0.0170	0.0024	2.1152	0.0174
AGE	?	0.0005	0.9610	0.1684	0.0005	0.9609	0.1684
BRDSIZE	?	−0.0045	−0.4415	0.3295	−0.0045	−0.4368	0.3312
BRDIND	–	0.0366	1.1362	0.1281	0.0371	1.1508	0.1251
SUPERSIZE	?	−0.0095	−1.5242	0.0639	−0.0095	−1.5321	0.0629
SUPERIND	–	−0.0001	−0.0172	0.4932	−0.0002	−0.0261	0.4896
DUALITY	+	0.0003	0.0634	0.4748	0.0003	0.0561	0.4777
AC_EXP	–	0.0011	0.1653	0.4344	0.0010	0.1528	0.4393
POLICON	+	0.0000	−0.0041	0.4984	0.0000	−0.0055	0.4978
TOP3	+	0.0075	0.4544	0.3249	0.0074	0.4512	0.3260
CODE_STATE	+	−0.0007	−0.1572	0.4376	−0.0007	−0.1591	0.4368
TRADABLE	–	−0.0072	−0.8296	0.2035	−0.0074	−0.8507	0.1976
INSTITUTE	–	−0.0272	−1.0946	0.1370	−0.0269	−1.0815	0.1399
CODE_BIG4	–	−0.0063	−0.9056	0.1827	−0.0061	−0.8866	0.1878
CODE_BIG10	–	−0.0057	−1.5456	0.0613	−0.0057	−1.5509	0.0606
Industries		Yes			Yes		
Years		Yes			Yes		
R-squared		0.2124			0.2125		
Adjusted R-squared		0.1790			0.1783		
F-statistic		6.3639			6.2180		
Prob(F-statistic)		0.0000			0.0000		
Durbin-Watson stat		1.8550			1.8537		
Observation		1059			1059		

ABSDA = absolute discretional accruals; DISSCORE = multiplying the number of ICWs with severity of weakness, the severity of ICWs is coded 0 – no weakness, 1 – minor weakness, 2 – major weakness, and 3 – serious weakness; ROA = return on assets; CFO = cash flow from operating activities; LOSS = loss making; SIZE = logarithm of total assets; LEV = total liability divided by total assets; GROWTH = changes in sales revenues divided by sales revenue; RETURN_DEV = standard deviation of monthly returns over the 12 months of the financial year; TURNOVER_A = total accounts receivable divided by total sales revenue; TURNOVER_I = total inventory divided by total costs of goods sold; AGE = number of years firms have operated. BRDSIZE = logarithm of the number of directors on the BOD; BRDIND = percentage of independent directors on the BOD; SUPERSIZE = logarithm of the number of supervisors on the supervisory board; SUPERIND = percentage of the number of non-paid supervisors on the supervisory board; DUALITY = 1 if a CEO is also the chairperson of the BOD, 0 otherwise; AC_EXP is percentage of members with accounting, finance, or economic background in audit committee; POLICON equals 1 if CEO or chairman of BOD is or was a representative of the National People's Congress, a government official, or military officer, 0 otherwise; TOP3 = percentage of top three shareholders' ownership interests in the firms; CODE_STATE = 1 if the firm is a state-controlled firm, 0 otherwise; TRADABLE = percentage of shares that can be traded without any restrictions; INSTITUTE = percentage of shares held by management funds; CODE_BIG4 = if Big 4 audit firm, 0 otherwise; CODE_BIG10 = 1 if top 10 Chinese local audit firm, 0 otherwise. *p*-values are one-tailed.

three levels—minor, major, and serious—of ICW severity is required by the *Basic Standard* and assessed based on the *Internal Control Evaluation Guidelines*.

$$\begin{aligned} ABSDA_{it} &= \alpha_1 + \phi_1 DISSCORE_{it} + \beta_1 ROA_{it} + \beta_2 CFO_{it} + \beta_3 LOSS_{it} + \beta_4 SIZE_{it} + \beta_5 LEV_{it} + \beta_6 GROWTH_{it} \\ &+ \beta_7 RETURN\_DEV_{it} + \beta_8 TURNOVER\_A_{it} + \beta_9 TURNOVER\_I_{it} + \beta_{10} AGE_{it} + \beta_{11} BRDSIZE_{it} + \\ &\beta_{12} BRDIND_{it} + \beta_{13} SUPERSIZE_{it} + \beta_{14} SUPERIND_{it} + \beta_{15} DUALITY_{it} + \beta_{16} AC\_EXP_{it} + \\ &+ \beta_{17} POLICON_{17} + \beta_{18} TOP3_{it} + \beta_{19} CODE\_STATE_{it} + \beta_{20} TRADABLE_{it} + \\ &\beta_{21} INSTITUTE_{it} + \beta_{22} CODE\_BIG4_{it} + \beta_{23} CODE\_BIGLOCAL10_{it} \\ &+ \sum_{j=1}^{18} \gamma_j IND_{it} + \varphi_1 Y2010_{it} + \varepsilon_{it} \end{aligned} \tag{6}$$

In line with our investigation on earnings quality and types of ICW in Section 6.2, we further divide *DISSCORE* into *DISSCORE_ACC* and *DISSCORE_ NONACC* in Model 6 to test whether the severity of accounting-related or non-accounting-related ICWs affects earnings quality. *DISSCORE_ACC* is the sum of the accounting-related ICW scores, while *DISSCORE_NONACC* is the sum of non-accounting-related ICW scores. The results of our tests are presented in Table 5.

According to Table 5, the coefficient of *DISSCORE* in Model 6 is positively and significantly related to *ABSDA* (coefficient = 0.0010 and $p = 0.0204$, one-tailed). This result demonstrates that the more severe the ICWs disclosed, the higher the *ABSDA*. This evidence further supports H1 that earnings quality is associated with disclosure of ICWs. The impacts of the severity of both accounting-related and non-accounting-related ICWs on ABSDA are also shown in Table 5. It shows that only the severity of non-accounting-related ICWs is positively and significantly related to *ABSDA*. These results further support H2b.

6.4. Robustness tests

Estimation of discretionary accruals is a difficult task for accounting academics. Since Jones (1991), there have been many alternative models suggested based on the Jones model. Among these, the modified Jones model (Dechow et al., 1995), the Dechow and Dichev (2002) model, in which current accruals are regressed on cash flows, and the Kothari et al. (2005) model are the most popular. The Kothari model is chosen as the main estimation model of discretionary accruals in our study. In our first robustness test, we also use the Jones model and the modified Jones model to re-estimate discretionary accruals, and then test them against the ICWs disclosed and/or measures of political connection. The results are similar to those obtained using the Kothari et al. (2005) model, as reported in previous parts of Section 6.

We also reclassify non-accounting-related ICWs by excluding non-specified items and recalculating non-accounting-related ICW scores accordingly. The empirical results still show a positive and significant relationship between the disclosure of non-accounting-related ICWs (measured in both the dummy variable of *DISWEAK_NOACC* and the continuous variable of *DISSCORE_NOACC*) and earnings quality.

In our last robustness test, we further investigate whether earnings quality differs between firms that have and those that have not had their ICRs audited. In our sample, 32.5% of firms choose to have their ICRs audited (Table 2, Panel A); it is interesting to see whether there are differences between the two groups. Our results show that having ICRs audited can mitigate relationship between earnings quality and the severity of non-accounting-related ICWs (the results are not tabulated, but are available on request).

7. Conclusion

This paper investigates the relationship between voluntary disclosure of ICWs and earnings quality in the unique environment of China. We find that internal control is an effective tool for controlling enterprise risks, and earnings quality, measured as the *ABSDA*, is positively related to the disclosures of ICWs. The more ICWs disclosed, the higher the value of *ABSDA*. In terms of different types of weakness (accounting-related versus non-accounting-related ICWs), our results demonstrate that earnings quality is significantly associated with disclosures of both accounting-related and non-accounting-related ICWs. These findings should be of particular interest to regulators in the United States and around the world. Our results provide strong supporting evidence to the current debate on whether the requirement for management and the auditor to evaluate internal control over financial reporting under SOX should be expanded to non-accounting-related areas.

Our research provides a valuable and timely study on the likely outcomes of implementing SOX-type regulations, that is, the *Basic Standard*, in China from 2012. Since 1978 when China carried out its economic reforms and implemented an “open door” policy, the Chinese economy has grown rapidly, at an annual growth rate of 10%, and has been integrated into the global economy. Many Western systems have been introduced into China over recent years. Some of them have been well adopted, while others are not so well blended into the institutional environment of China. Some of these systems are said to be adopted in form only, and not in substance, such as the corporate governance system (Firth et al., 2007). In this paper, we examine the impact of the introduction of internal control reporting in China. Our initial assessment of this reform proves to be positive, implying that internal control reporting has the potential to be well integrated into Chinese listed firms.

The implementation of the *Basic Standard* provides many research opportunities. Ours is only an initial and overall assessment of internal control reporting in a voluntary regime in the Chinese setting. There are still many questions that must be answered. For example, what are the differences in ICW disclosure behaviors between voluntary and compulsory regimes since China made

internal control reporting compulsory from 2012? Are there any significant improvements in firms' internal control, including in accounting and non-accounting-related areas, since the *Basic Standard* was introduced? And if there are improvements, what are the effects on earnings quality? Finally, what are the impacts of accounting and non-accounting-related ICWs on audit fees?

Overall, our results show that ICW disclosure in China indeed provides additional useful information to users. Internal control reporting is not a "window dressing" activity; rather, it is an alternative indicator of earnings quality. Our findings have significant implications for market regulators such as the CSRC. First, ICRs are necessary alongside traditional financial statements even though China has a different political, economic, and cultural environment and hence constitutes a different information õenvironment (Piotroski & Wong, 2011). Second, internal control reporting is an effective vehicle; not only can it improve the quality of financial reporting, but it can also strengthen its internal management, such as preventing fraud and embezzlement.

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